

WHAT IS CLAIMED IS:

1. A LED backlight for an LCD display, the backlight comprised of an array of LEDs and LED drive and control circuitry.
2. The backlight as in Claim 1, wherein the array of LEDs provide the color output for the pixels for the displayed image of the LCD.
3. The backlight as in Claim 2, wherein the pixels of the LCD are not color filtered.
4. The backlight as in Claim 3, wherein the LED backlight provides red, green and blue light to the LCD display in a repeating cycle, LCD pixels of the display being addressed to transmit the amount of red, green and blue light in the portion of the image corresponding to the pixels.
5. The backlight as in Claim 1, wherein the drive and control circuitry regulates at least one of the color point and color content of the light output of the LED backlight.
6. The backlight as in Claim 1, wherein the drive and control circuitry comprises a power regulated converter with control electronics.

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7. The backlight as in Claim 6, wherein the power regulated converter is a fast pulse converter.

8. The backlight as in Claim 7, wherein the fast pulse converter has a response time on the order of microseconds.

9. The backlight as in Claim 1, wherein the array of LEDs is comprised of sub-arrays of red, green and blue LEDs, the drive circuitry regulating the light output of each sub-array independently of the others.

10. The backlight as in Claim 9, wherein the pixels of the sub-arrays are interspersed in a two-dimensional plane.

11. The backlight as in Claim 9, wherein the sub-arrays are comprised of one or more regions of contiguous pixels of the same color.

12. The backlight as in Claim 9, wherein the drive circuitry receives as input reference signals corresponding to the red, green and blue light output of the backlight, the reference signals being used by the drive circuitry to drive the respective red, green and blue sub-arrays to output red, green and blue light corresponding to the respective input reference signals.

13. The backlight as in Claim 12, wherein the reference signals received reflect at least part of an image to be displayed.
14. The backlight as in Claim 13 wherein the reference signals received are frames of a video signal and its color and intensity content.
15. The backlight as in Claim 9, wherein the drive circuitry independently regulates the light output of each sub-array to create a backlight having at least one of a color point and color temperature that is a function of an image displayed by the LCD display.
16. The backlight as in Claim 15, wherein the image is at least one frame of a video displayed on the LCD display.
17. The backlight as in Claim 9, wherein the drive circuitry is comprised of a separate controller for the LEDs of each sub-array.
18. The backlight as in Claim 17, wherein each controller for the LEDs of each sub-array controls at least one switch that regulates the current to one or more LEDs of the sub-array.
19. The backlight as in Claim 9, wherein the drive circuitry is comprised of at least one controller that provides independent control signals for the LEDs of each sub-array.

20. The backlight as in Claim 19, wherein the at least one controller provides control signals that control at least one switch that regulates the current to one or more LEDs of the sub-array.

21. The backlight as in Claim 9, wherein the drive circuitry creates at least one of a pulse amplitude modulation of the current input to the LEDs in the sub-arrays, a pulse width modulation of the current input to the LEDs in the sub-arrays and a pulse frequency modulation of the current input to the LEDs in the sub-arrays.

22. The backlight as in Claim 21, wherein the at least one of a pulse amplitude modulation of the current input to the LEDs in the sub-arrays, a pulse width modulation of the current input to the LEDs in the sub-arrays and a pulse frequency modulation of the current input to the LEDs in the sub-arrays includes a dc current bias.

23. The backlight as in Claim 1, wherein the LED backlight is comprised of at least one LED module comprised of LEDs of one color.

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